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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,039	03/17/2004	Wenxi Huang	035394-0256	3460

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EXAMINER

YU, MELANIE J

ART UNIT	PAPER NUMBER
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1641

DATE MAILED: 07/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/802,039

Applicant(s)

HUANG ET AL.

Examiner

Melanie Yu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 95-125 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 95-125 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 November 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/24/14.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of group III, claims 51-70, in the reply filed on 13 May 2005 is acknowledged. Applicant does not provide grounds of traversal, therefore the restriction is deemed proper.

Applicant's amendment filed 24 June 2005 has been entered. Claims 1-94 are canceled. Claims 95-125 are currently pending.

Information Disclosure Statement

2. The information disclosure statement filed 24 November 2004 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 95-125 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 95, it is unclear whether the "different second polymer" is intended to mean the second polymer is different from the first polymer.

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Regarding claim 97, it is unclear whether the first polymer is photo-crosslinked with the second polymer, or whether the first polymer is photo-crosslinked with the first polymer and also cross-linked with the second polymer.

Regarding claim 123, it is unclear whether the term “discreet” is intended to be “discrete”. The term has been interpreted as meaning separate spots on the surface of the device.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 95-124 are rejected under 35 U.S.C. 102(e) as being anticipated by Boschetti et al. (US 2003/0218130).

With respect to claims 95 and 124, Boschetti et al. teach a biochip (par. 0043) device that comprises a substrate comprising a surface coated with a hydrogel polymer blend composition (par. 0063) wherein the composition comprises: a first photo-crosslinked polymer (par. 0073; 0080), and a different second polymer (binding functionality can be nucleic acids, which is a polymer, par. 0049; binding functionality is polymerizable monomer, which becomes a polymer after a polymerization reaction, par. 0009) comprising selective binding functionality (par. 0049; 0080), wherein the device is a mass spectrometer (par. 0011).

Regarding claim 96, Boschetti et al. teach photo-crosslinking results from reacting benzophenone groups on the first polymer (photo initiator of 2,2'-dihydroxy-4-

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methoxybenzophenone is a benzophenone group, par. 0120). Furthermore, claim 96 is drawn to a method of photo-crosslinking, and does not appear to require further product limitations.

Although, Boschetti et al. teach photo-crosslinking from reacting benzophenone groups on the first polymer, it is unclear what product limitations are required for the device in order to react benzophenone groups.

With respect to claims 97 and 100, Boschetti et al. teach the first polymer crosslinked with the second polymer (all components are crosslinked with each other, par. 0009) and the first and second polymers in the form of an interpenetrating polymer network (par. 0112).

Regarding claims 98, 99 and 101-106, Boschetti et al. teach the first polymer further crosslinked with the second polymer (par. 0009) and the first and second polymers comprising a polysaccharide of dextran (first and second polymers are crosslinked and therefore both contain the polysaccharide, par. 0073-0074).

With respect to claims 107 and 108, Boschetti et al. teach the first and second polymer comprising a poly-acrylamide (first polymer is functionalized by N,N'-methylene-bis-acrylamide, which is bonded to the binding functionality, par. 0020).

Regarding claims 109-114, Boschetti et al. teach a selective binding functionality being an carboimidazole, a hydrophilic moiety, a group for covalently binding a molecule, a biospecific binding functionality being an antibody or nucleic acids (par. 0049).

With respect to claim 115, Boschetti et al. teach a matrix for laser desorption/ionization mass spectrometry applied to the surface (par. 0142).

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Regarding claims 116 and 117, Boschetti et al. teach the hydrogel physically attached to the surface through an anchor and covalently bound to the surface by being covalently bound to the anchor (par. 0006).

With respect to claims 118-121, Boschetti et al. teach the thickness of the hydrogel polymer blend composition (coating) being a film having a thickness of at least 10 microns (par. 0078), which encompasses the recited thickness of about 1 to about 10 microns. Boschetti et al. also teach the substrate comprising aluminum (par. 0013), comprising a primer layer that comprises silane (par. 0014), and the substrate comprising metal oxide (par. 0013).

Regarding claims 122 and 123, Boschetti et al. teach the hydrogel being a uniform layer on the surface (homogeneous layering indicates uniform layering, par. 0180-0182), and the hydrogel forming discrete spots on the surface (par. 0099; 0114).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claim 125 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boschetti et al. (US 2003/0218130) in view of Hillenkamp et al. (US 5,118,937).

Boschetti et al. teach a device that comprises a substrate comprising a hydrogel polymer blend composition, but fail to teach the hydrogel polymer blend composition comprising an energy absorbing moiety.

Hillenkamp et al. teach a matrix comprising an energy absorbing moiety (col. 3, line 64-col. 4, line 19), in order to provide strong absorbers in a wavelength range.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in the device of Boschetti et al., an energy absorbing moiety as taught by Hillenkamp et al., in order to prevent desorption of analyte.

6. Claims 95, 96, 99 and 100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al. (US 5,955,729) in view of Johnson et al. (US 6,372,813).

Nelson et al. teach a mass spectrometer (col. 3, lines 30-40) that comprises a surface coated with a hydrogel polymer blend composition (col. 3, line 60-col. 4, line 1), wherein the composition comprises: a first polymer being a polysaccharide of dextran (col. 3, lines 64-66) and a different second polymer comprising a selective binding functionality (antibody is attached to a surface, and surface is a hydrogel, col. 8, lines 21-31). Nelson et al. fail to teach the first polymer being photo-crosslinked.

Johnson et al. teach a photo-crosslinked polymer (col. 12, lines 56-59; col. 14, lines 9-19; col. 15, lines 9-32), in order to provide simultaneous attachment of biomolecules and crosslinking of the hydrogel matrix.

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Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in the first polymer of Nelson et al., a photo-crosslinked polymer as taught by Johnson et al., in order to reduce manufacturing time.

With respect to claim 96, Johnson et al. teach photo-crosslinking resulting from reacting benzophenone groups on the first polymer (col. 14, lines 9-19).

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie Yu whose telephone number is (571) 272-2933. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (571) 272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Melanie Yu
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7/9/05